

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the matter of
Digital Audio Broadcasting Systems And
Their Impact on the Terrestrial Radio
Broadcast Service

MM Docket No. 99-325

**REPLY BY
DIGITAL RADIO MONDIALE (DRM)
TO COMMENTS ON
THE NATIONAL RADIO SYSTEMS COMMITTEE'S
"IN-BAND/ON-CHANNEL DIGITAL RADIO BROADCASTING STANDARD NRSC-
5"**

Digital Radio Mondiale (DRM) is a worldwide consortium of approximately 90

members at the moment. These members represent broadcasters, transmitter

manufacturers, receiver manufacturers, software and chip development and production

organizations, research institutes, regulatory organizations, international broadcasting

groups, and broadcast network operators. Several of these are U.S. corporations, such as

Texas Instruments and Harris. The U.S. government's international broadcasting

organization, the IBB, is also a member. Regular broadcasting of DRM signals in

terrestrial broadcasting bands in different countries was initiated in June 2003, and now

totals over 250 hours per day. The DRM system is a worldwide "open, non-proprietary"

system that has been standardized by ETSI, the ITU, and the IEC. The initial version was

published in late 2001.

**1. THERE IS A HUGE VARIETY IN THE COMMENTS, BOTH IN FACTS AND
OPINIONS, THEREBY POSING A GREAT RESPONSIBILITY ON THE
FCC**

We have reviewed all the comments to this Public Notice. Our reply to these

comments takes cognizance of the enormous work carried out over the past several

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years by the National Radio Systems Committee's DAB Subcommittee (and its Working

Groups), culminating in the 2 ½ year effort by the standardization working group that led

to NRSC-5. We also recognize the great responsibility the FCC will have in deciding "if

and when" to adopt NRSC-5 as it now stands, or as it may be modified. We

say this because there are large differences in the suggestions given in the comments

to the Public Notice, ranging (a) from rapid adoption of the draft standard to (b) never

permit digital modulation in the AM and FM broadcasting bands. These range from

the thought provoking response from Mr. Jonathan Hardis, to the comments by the

iBiquity Corporation and major broadcasting station owners, through to one page

denunciations of the entire system concept.

2. DRM RECOGNIZES THAT NRSC-5 IS A MAJOR STEP IN FOSTERING THE INTRODUCTION OF TERRESTRIAL DIGITAL RADIO IN THE U.S.

Since around 1998 the NRSC, in collaboration with the iBiquity Corporation and

its subcontractors, have conducted tests, made evaluations, and developed a standard

(NRSC-5) to support the development of IBOC for the U.S. Some of the country's

leading experts were involved in this process. Thus, NRSC-5 is a major accomplishment,

and deserves the utmost attention in determining whether or not to adopt it as a U.S.

standard, or to modify it. If modification is in order, is NRSC-5 accepted as it is with the

proviso that certain additions need to be made, with the appropriate instructions from the

FCC to the NRSC? Or is it simply rejected until such modifications are made after due

deliberation by the NRSC? And, of course, the timing of any FCC actions, including

more or less immediate adoption, is important.

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3. SEVERAL OF THE COMMENTS NOTE THE LACK OF A DESCRIPTION OF AN AUDIO CODEC IN NRSC-5

Debates within the NRSC's standardization working group went on for months on how to take into account that the "goals and objectives" for the working group implies a completely open standard, while the final developer of an IBOC system insisted on the proprietary nature of the audio codec part of the overall system. As was stated by some of the commenters, the NRSC eventually agreed to develop a standard absent this component. In short NRSC-5 does not describe the audio codec (called HDC in normative references) to a degree of detail that should be present in a standard.

This lacuna induced discussion of how other audio codecs might be permitted into the IBOC standard. Work is still ongoing within the NRSC to see how this might be accomplished. However, to repeat, this fundamental part of a transmit/over the air/reception system is missing in NRSC-5.

4. DRM HAS NO SPECIFIC SUGGESTION WITH RESPECT TO THE TIMING OF THE ADOPTION OF NRSC-5

Despite the lack of a standardized audio codec in NRSC-5, and upon review of all the comments and the background of the deliberations of the NRSC's DAB Subcommittee standardization working group, DRM does not suggest any specific timing sequence for NRSC-5.

**5. CONCLUSION: HOWEVER, DRM WOULD LIKE TO SEE A “FINAL”
IBOC STANDARD THAT WILL PERMIT OTHER AUDIO CODECS
INTO
THE IBOC SYSTEM**

As pointed out in the Microsoft/Impulse/Broadcast Signal Lab
comments (July 18,

2005 on page 2), “the Commission should remand NRSC-5 to the NRSC with

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instructions to complete the standard by incorporating both an initial codec
and a

mechanism that enables the use of alternative, optional codecs.” From an
engineering

standpoint it should not be difficult to incorporate this “switching function”
into the

design of a complete IBOC system.

Therefore, DRM urges the Commission to note this to the NRSC.

We are not suggesting that the NRSC-5 not go forward as now written
if the

Commission believes this is the best way to proceed. We are suggesting that
the

Commission take the proper actions to add alternative audio codec
possibilities to a

“final” IBOC standard.

For reasons of flexibility in the future, for both broadcasters and radio
listeners, it

will be advantageous to have within the U.S. IBOC standard the possibility
of audio

codecs that can function well at low bit rates and are “non-proprietary”.
Consumer

receivers will then be able to decode more than one or two audio programs per assigned

center frequency.

MONDIALE

DRM

Respectfully submitted,

DIGITAL RADIO

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